CITY OF MERIDIAN (PWS 4010097)
SOURCE WATER ASSESSMENT FINAL REPORT

May 5, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for City of Meridian, Idaho*, describes the public drinking water system, the boundaries of the modeled zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taking into account with local knowledge and concerns, to develop and implement appropriate protection measures for each source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Each category is assigned 0 to 6 points. Therefore, a low rating in one or two categories coupled with a higher rating in another category results in a final rating of low (0-5), moderate (6-12), or high (13-18) susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a public water system source could expect to achieve is generally a moderate rating. The susceptibility analysis, as designed by the state source water assessment guidance technical committee and approved by EPA, represents a worst-case scenario. Potential contaminants are divided into four categories, inorganic chemical (IOC, e.g. nitrates) contaminants, volatile organic chemical (VOC, e.g. petroleum products) contaminants, synthetic organic chemical (SOC, e.g. pesticides) contaminants, and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The City of Meridian drinking water system consists of 17 wells, 13 of which are detailed in this report. All of the wells detailed in this report (#7 to #12, #14 to #20) rate moderate susceptibility to IOCs, VOCs, SOCs, and microbial contamination. The only exception is that Well #15 rates low susceptibility to microbial contaminants.

In addition, the City of Meridian has four wells that were completed in the year 2000 or later (Wells #21, #22, #23, and #24). An addendum to this report will be provided in State Fiscal Year 2004 covering these and any additional wells.

All of the wells have adequate well lots providing at least a 50-foot barrier around the wellhead. The City of Meridian provided well logs for all of the wells. Operator input was used to answer certain questions for the hydrologic sensitivity and the system construction sections. Hydrologic sensitivity rated as moderate for all wells except #11 and #14, which rated high. System construction scores rated low to moderate for all wells. With the urbanization of the city of Meridian the potential contaminant and land use scores were moderate to high for IOCs, VOCs, and SOCs. When determining potential contaminant/land use scores, a maximum number of potential contaminant points is obtained once four (4) sources have been identified (DEQ, 1999), even if the contaminants associated with these sources are not evident in the aquifer that the wells produce water from. Each well had a low potential contaminant and land use score for microbial contaminants.

A summary of the detected chemicals and constituents for each of the potential contaminant categories (IOCs, VOCs, SOCs, and microbes) is included. In each case, the detected levels are compared with the maximum contaminant levels (MCLs) set by the EPA. MCLs are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. When the detected levels are less than the MCLs, public health is considered to be protected. When detected levels are greater than ½the MCL, public water systems are required to state the results in the Consumer Confidence Report (CCR). Secondary standards are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.

None of the wells has recorded the presence of SOCs during any water chemistry tests.

Total coliform bacteria were detected in the distribution system in October 1998. However, the problem was alleviated and hasn't been an issue since 1998.

The IOCs that have primary standards and have been detected in most of the City of Meridian wells at levels below the MCLs as set by EPA include arsenic, barium, cadmium, chromium, magnesium, nitrate, and fluoride. In addition, the IOCs that have primary standards and have been detected in Well #17 at levels below the MCLs as set by EPA include cyanide, beryllium, and antimony. The IOCs that have secondary standards and have been detected in most of the City of Meridian wells include aluminum and manganese.

Two IOCs deserve to be singled out because of the future activities that will be occurring to help lower the levels on a statewide basis. These IOCs, nitrate and arsenic, are identified in every source water assessment report that has such detections and are singled out with the specific levels that have been detected. Customers with the City of Meridian need not worry about these chemicals since neither has exceeded the MCLs as set by the EPA.

Nitrates have also been detected in a number of the City's wells (#7, #8, #9, #11 and #14) at relatively low levels, but above 2 parts per million (ppm). The MCL for nitrate is 10 ppm. According to a 2002 Idaho Department of Water Resources report (IDWR, 2002), levels above 2 ppm may be indicative of anthropogenic or human impacts. Nitrate has not been detected in well #9 since it was reconstructed and sealed into a much deeper completion interval. There is presently no health risk related to nitrate in the City of Meridian's drinking water supply.

The IOC arsenic has been detected in the distribution system at 8 parts per billion (ppb), in Well #11 at 5 ppb, and in Well #17 at 7 ppb. When these detections were made, the MCL for arsenic was 50 ppb. In October 2001, the U.S. EPA reduced the arsenic MCL from 50 ppb to 10 ppb, giving public water systems until January 2006 to comply with the new standard. If similar levels are detected after January 2006, they would be identified in the CCR because they would be equal to or greater than one-half the MCL of 10 ppb. There is presently no health risk related to arsenic in the City of Meridian's drinking water supply.

In August 2000, the VOC chloroform was detected in Wells #11 and #17. This trihalomethane is a by-product of the chlorination process and is not considered a problem with the source water.

Though the predominant land use in the area of the City of Meridian is urban, most of the well delineations cross priority areas of nitrate and the pesticides atrazine and alachlor. These priority areas are associated with the historical agricultural land use activities of the area. In addition to crossing a nitrate priority area, the delineations of Wells #18 and #20 also cross an organic priority area of the VOC perchloroethelene (PERC).

The priority areas were established in 1998 and 1999 by the Ground Water Monitoring Technical Committee based on data collected from a variety of wells throughout the State. An organic priority area (i.e. VOC PERC) is an area where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards. An SOC priority area (i.e. pesticides atrazine and alachlor) is an area where greater than 25% of the wells/springs show the pesticides higher than primary standards or other health standards. A nitrate priority area is an area where greater than 25% of wells/springs show nitrate values above 5 ppm.

Though the drinking water system meets current regulations, the City of Meridian is aware that the potential for contamination still exists. To better protect the health of the users, the City of Meridian has complied with the stringent well construction practices required of all public water systems instituted in 1993.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The City of Meridian maintains that the first line of defense is adequate well construction practices. As such, the city employs professional hydrogeologists that recommend best management practices and supervise the development and installation of all of the city's wells. Current wells are built to a level which meet and generally exceed the current well construction standards. Older wells have been deepened, or when necessary, abandoned to protect the health of the public. If any problems arise in the future, the City of Meridian will be able to accommodate all of the users because of the redundancy and back-up capabilities of the other wells. Current wellhead protection practices should continue to be maintained.

As many of the delineations cover predominantly urban areas, there should be a strong public education program to make people aware that they live above their source of drinking water. Additionally, storm water practices should be assessed. Since some of the well delineations cross agricultural land uses, there should be a focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas.

No potential contaminants, including roads, houses, or construction sites, should be allowed within 50 feet of any of the wellheads.

Though microbial contamination has never been a problem with the city drinking water, appropriate disinfection practices need to be maintained in a way to protect the drinking water from VOC by-products, a result of the chlorination disinfection. Though water cannot be totally free of by-products when disinfection is used, they can be reduced by treatment modifications. In 1983, EPA identified some technologies, treatment techniques and plant modifications that water systems could use to reduce the amount of disinfection by-products produced. For disinfection by-product control strategies, see http://www.epa.gov/safewater/mdbp/pdf/alter/chapt_2.pdf.

Much of the designated protection areas are outside the direct jurisdiction of the City of Meridian, making collaboration and partnerships with state and local agencies and industry groups critical to the success of drinking water protection. All wells should maintain sanitary standards regarding wellhead protection. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations contain some urban and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are major transportation corridors through the delineations, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water assessment protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing drinking water protection strategies please contact the Boise Regional Office of the DEQ.

SOURCE WATER ASSESSMENT FOR THE CITY OF MERIDIAN, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand the results of the assessment.** Maps showing the delineated source water assessment areas and the inventory of significant potential sources of contamination identified within those areas are attached (Appendix A). The lists of significant potential contaminant source categories and their rankings used to develop the assessment are also attached (Appendix B).

Background

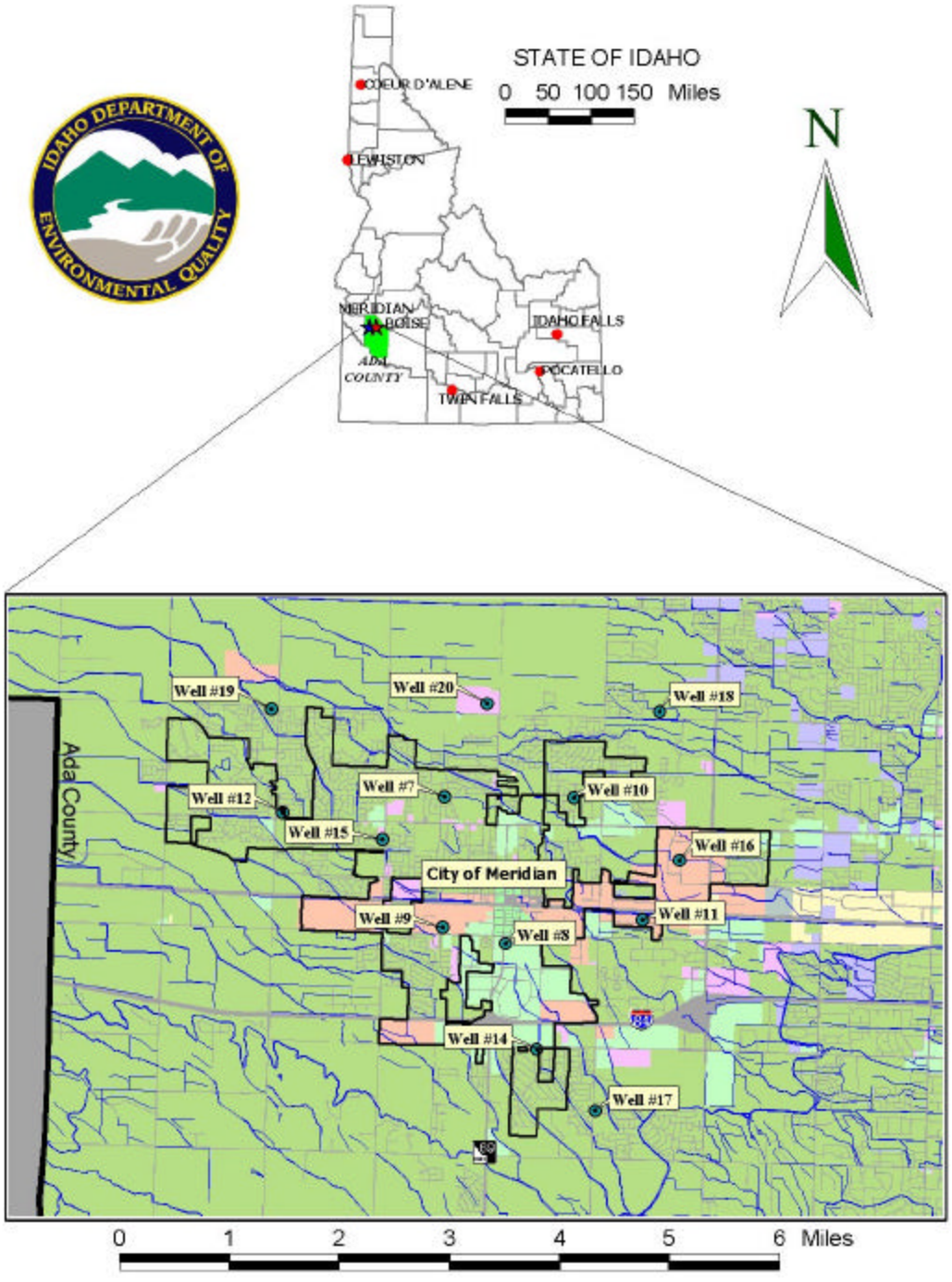
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community based on its own needs and limitations should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

FIGURE 1 - Geographic Location of City of Meridian, PWS 4010097, Well #7 - Well #20



Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the City of Meridian is comprised of seventeen ground water wells that serve approximately 41,000 people. Thirteen of the wells are detailed in this report. The newest wells, #21, #22, #23, and #24, will be assessed at a later time. The wells are located in Ada County, at various locations around the City of Meridian (Figure 1).

There have been no significant detections of anthropogenic contaminants in the drinking water system.

None of the wells has recorded the presence of SOCs during any water chemistry tests.

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The priority areas were established in 1998 and 1999 by the Ground Water Monitoring Technical Committee based on data collected from a variety of wells throughout the State. An organic priority area (i.e. VOC PERC) is an area where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards. An SOC priority area (i.e. pesticides atrazine and alachlor) is an area where greater than 25% of the wells/springs show the pesticides higher than primary standards or other health standards. A nitrate priority area is an area where greater than 25% of wells/springs show nitrate values above 5 ppm.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with BARR Engineering to perform the delineations using a combination of MODFLOW and a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Boise Valley aquifer in the vicinity of the City of Meridian. The computer models used site specific data, assimilated by BARR Engineering from a variety of sources including the City of Meridian well logs, other local area well logs, the Treasure Valley Hydrologic Project, and hydrogeologic reports (detailed below). It should be noted that BARR Engineering produced a regional model, and as such, local hydrogeologic information was not always incorporated. In the future, the delineations may be updated given further studies of the area in question.

Treasure Valley Hydrologic Project Information (Petrich and Urban, 1996; Neely and Crockett, 1998; Petrich et al., 1999)

The "Treasure Valley" is a geopolitical region that includes the lower Boise River sub-basin. The lower Boise River sub-basin begins where the Boise River exits the mountains near the Lucky Peak Reservoir. From Lucky Peak Dam the lower Boise River flows about 64 (river) miles northwestward through the Treasure Valley to its confluence with the Snake River. The Treasure Valley Hydrologic Project area encompasses the lower Boise River area, and extends south to the Snake River. The southern area is included in the study area because of ground water flow from the Lower Boise River
basin south toward the Snake River.

Significant amounts of desert area were converted to flood irrigated agriculture beginning in the 1860s. Irrigation led to increases in shallow ground water levels in some areas. The shallow ground water levels provided an inexpensive and readily obtainable water supply that is used extensively throughout the valley. Much of the population growth in the Treasure Valley has been occurring in previously flood-irrigated agricultural areas, resulting in increased pumpage and a reduction in local aquifer recharge. In addition, irrigation in some areas has become more efficient, reducing the amount of irrigation-related infiltration. Decreasing aquifer recharge and increasing pumpage is thought to be contributing to decreasing ground water levels in some areas.

The Treasure Valley experiences a temperate and arid-to-semiarid climate. Average high temperatures range from about 90°F in summer to 36°F in winter; low temperatures range from about 20°F in winter to about 56°F in summer. The average precipitation ranges from about 8 to 14 inches throughout most of the valley, most of which falls during the colder months.

Major surface water bodies include the Boise River, Lake Lowell, and Lucky Peak Reservoir. The primary source of surface water in the Treasure Valley is precipitation falling in the high elevation area in the Boise River basin upstream of Lucky Peak Dam. Much of the runoff from high elevation areas is stored in three reservoirs: Anderson Ranch Reservoir, Arrowrock Reservoir, and Lucky Peak Reservoir.

The region's croplands are irrigated primarily with surface water through an extensive network of reservoirs and canals. The first canals were constructed in the 1860's; there are now over 1,100 miles of major and intermediate canals in the Treasure Valley. The primary sources of the irrigation water in the Treasure Valley include the Boise, Snake, and Payette Rivers. The majority of canals are owned and maintained by canal companies and irrigation districts.

Hydrogeology (from Petrich et al., 1999)

The lower Boise River sub-basin (Treasure Valley) is located within the northwest-trending topographic depression known as the western Snake River Plain. The western Snake River Plain is a relatively flat lowland separating Cretaceous granitic mountains of west-central Idaho from the granitic/volcanic Owyhee mountains in southwestern Idaho. The western Snake River Plain extends from about Twin Falls, Idaho northwestward to Vale, Oregon. The Snake River Plain is about 30 miles wide in the section containing the lower Boise River.

Sediments originating from the surrounding mountains began accumulating on top of thick, basal basalts. Rifting and continued subsidence maintained the lowland topography, leading to the additional accumulation of water and sediments (Othberg, 1994). Basin infilling by sediments and basalt occurred from the late Miocene through the late Pliocene (Othberg, 1994). Incision caused by flowing water in major drainages (e.g., Snake and Boise Rivers) began in the late Pliocene or early Pleistocene, although deposition of coarse sediments continued during Quaternary glaciations (Othberg, 1994).

Several Quaternary basalt flows have been described in the western Snake River Plain, and have been assigned to the upper Snake River Group (Malde, 1991; Malde and Powers, 1962). Lava flowed across portions of the ancestral Snake River Valley (Malde, 1991) in an area that is now south of the Boise River. The Snake River then changed course, incising at its present location along the southern margin of the basalt flows. More recent eruptions (from Kuna Butte and other local sources) spilled lava into the canyon south of Melba. The Snake River has since incised this basalt (Malde, 1991).

The general stratigraphy of the western Snake River Plain consists of (from top to bottom) a thick layer of sedimentary deposits underlain by a thick series of basalt flows, which in turn are underlain by older, tuffaceous sediments and basalt (Malde, 1991; Clemens, 1993). The upper thick zone of sediments (up to approximately 6,000 feet thick) distinguishes the western Snake River Plain from the eastern Snake River Plain, in which the upper section is primarily Quaternary basalt (Wood and Anderson, 1981).

The uppermost sediments and basalt belong to the Pleistocene-age Snake River Group. The Snake River Group consists of terrace sediments, Quaternary alluvium, and Pleistocene basalt flows (Wood and Anderson, 1981). Snake River Group sediments and basalts cover much of the project area (Othberg and Stanford, 1992).

The Snake River Group overlies the Idaho Group sediments. The Idaho Group sediments can be divided into two general parts (Wood and Anderson, 1981). The lower Idaho Group contains sediments described as lake and stream deposits of buff white, brown, and gray sand, silt, clay, diatomite, numerous thin beds of vitric ash, and some basaltic tuffs. The upper part of the lower Idaho Group also contains some local, thin, basalt flows. The upper Idaho Group consists of sands, claystones, and siltstones, but differs from the lower Idaho Group in that it contains a greater percentage of coarser-grained materials. The upper Idaho Group is associated with a fluvial/deltaic/lacustrine depositional environment; the lower Idaho Group sediments were deposited in more of a lacustrine/deltaic environment (Wood, 1994).

Wood (1994) identified a buried lacustrine delta within the Idaho Group sediments in the Nampa-Meridian area. The location of the delta in the middle of the western Snake River Plain suggests that the eastern part of the Boise River basin was delta plain and flood plain at the time of deposition, while the western part was a deep lake environment. The delta probably prograded northwestward into a lake basin 800 feet deep, based upon high resolution seismic reflection data and resistivity log interpretations. The delta-plain and front sediments were shown to be mostly fine-grained, well-sorted sand with thin layers of mud (Wood, 1994). The northwest trend of the delta indicates a sediment source to the southeast, such as where the Snake River flows today (Wood, 1994).

A substantial, laterally extensive layer of clay is found at depths of 300 to 700 feet below ground surface. The clay is important because it represents, in some areas, a significant aquitard separating shallow overlying aquifers from deeper zones. The clay, often described in well logs as having a blue or gray color, has been observed as far west as Parma, and as far east as Boise (although the clay is not found in the extreme eastern portions of the Treasure Valley). The clay varies from a few feet to a few hundred feet in thickness. Although significant layers of clay are present throughout the Idaho Group sediments, individual clay units are not necessarily continuous over large areas. Also, the top of the clay can vary in elevation by up to approximately 200 feet in some locations, such as in an area west of Lake Lowell. In general, sediments above the "blue clay" are coarser-grained than the interbedded sands, silts, and clays underlying the "blue clay."

The top of the upper Idaho Group is marked in several parts of the Treasure Valley by a widespread fluvial gravel deposit known as the Tenmile gravels. Tenmile gravels contain rounded granitic rocks and felsic porphyries originating from the Idaho Batholith to the north and northeast. The Tenmile gravels range up to 500 feet in thickness along the Tenmile Ridge south of Boise, but are less than 50 feet thick in the Meridian-Meridian area (Wood and Anderson, 1981).

Aquifer Systems and Hydrogeologic Characteristics

Ground water for municipal, industrial, rural domestic, and irrigation uses in the Treasure Valley is drawn almost entirely from Snake River Group and Idaho Group aquifers. Many domestic wells draw water from shallow aquifers, such as those in the Snake River Group deposits. Larger production wells (for municipal and agricultural uses) draw water from the deeper Idaho Group sediments.

Aquifers contained in the Snake River and Idaho Group sediments comprise shallow and regional ground water flow systems. Shallow aquifers contained in Snake River Group sediments and basalts may belong to local flow systems. Most local flow system recharge stems from irrigation infiltration and channel (e.g., streams or canals) losses. Discharge from shallow, local flow systems often is to local drains or streams. The time from recharge to discharge in shallow flow systems (residence times) probably ranges from days to tens of years.

In contrast, regional ground water flow systems extend much deeper than local flow systems. The Treasure Valley regional flow system begins in the eastern part of the valley as indicated by downward hydraulic gradients in the Boise Fan sediments described by Squires et al. (1992). Some water also enters the regional flow system as underflow from the Boise Foothills in the northeastern part of the valley. The regional flow system is thought to discharge primarily to the Boise and Snake Rivers in the western and southwestern parts of the valley.

Aquifer material characteristics, material heterogeneity, and structural controls influence Treasure Valley ground water flow. Coarse-grained materials (e.g., sand and gravel) in upper zones are more capable of transmitting ground water than fine-grained sediments (e.g., silt and clay). Clay and silt in the Snake River sediments can restrict vertical and/or horizontal ground water movement. Perched aquifers are created when fine-grained lenses impede downward vertical flow.

Sequences of interbedded sand, silt, and clay, such as the Deer Flat Surface and the upper portion of the Glenns Ferry Formation of the upper Idaho Group in the Meridian-Meridian area, are the major water-producing aquifers in a large part of Canyon County (Anderson and Wood, 1981). The coarse-grained sediments in this zone produce water in excess of 2,000 gallons per minute (gpm).

The capture zones delineated herein are based on limited data and must be taken as estimates given the regional modeling effort employed. As new data has become available from the City of Meridian regarding local hydrogeologic parameters, these delineations may be adjusted based on additional modeling incorporating the new data. These adjustments will be incorporated during the addendum to this report when City of Meridian wells #21 through #24 are assessed.

The delineated source water assessment areas for the majority of the wells of the City of Meridian can best be described as south-eastward trending corridors approximately 3- to 3-¼ miles long and ¼ mile wide (Figures 2 through 14, Appendix A). The actual data used by BARR Engineering in determining the source water assessment delineated areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ, the local operator, and from available databases.

Land use within the immediate area of the City of Meridian wellheads consists of mostly residential, commercial, and transportation corridor uses, while the surrounding area is predominantly land under residential and commercial development.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in September and October 2001 by the DEQ. The first phase involved identifying and documenting potential contaminant sources within the City of Meridian source water assessment areas (Appendix A, Figures 2 through 14) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ in 1999. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water areas contain a varying number of potential contaminant surface sites from land use activities, ranging from four (Well #17) to 31 (Well #10). The delineations contain transportation corridors (Union Pacific Railroad, Interstate 84, Eagle Road, Ustick Road, Fairview/Cherry Lane, etc) and various commercial, industrial, and agricultural sources as potential sources of contamination. Spills occurring on the transportation corridors could eventually contribute all classes of contamination to the aquifer.

Additionally, there are sites regulated by the Resource Conservation Recovery Act (RCRA) and the Superfund Amendments and Reauthorization Act (SARA). Appendix A contains the locations of the identified potential contaminant sources as well as a description for each well (Tables 3 through 15).

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the well is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix B contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is rated upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of fine-grained geologic material above the producing zone of the well. Regional soil data was classified as either poor to moderately drained or moderately to well drained. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for Wells #11 and #14, and moderate for Wells #7, #8, #9, #10, #12, and #15 through #20 (Table 2). Thick, low permeability clay layers above the producing zones, indicated by the available well logs, contributed to the moderate sensitivity ratings. Regional soil data, as averaged across the entire delineation boundary, indicate the presence of moderate to well drained soils for the area. The vadose zone near the wellheads consists of sand, gravel, and clay in various proportions.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, then contamination down the well bore is less likely. DEQ appreciates the contribution of hydrogeologic information from the City of Meridian regarding the issue of well seals and protection from flooding.

Well driller's reports and on-site documentation of well construction and seals by registered hydrogeologists were available providing useful well construction information for all of Meridian's wells. Operator information provided a determination of the maintenance of wellhead and surface seals and protection of the wells from surface flooding. All of the wells produce from a confined aquifer under pressure. Thus, the producing layers are many hundreds of feet below ground surface, but the static water depth is generally within 25 feet of the surface. Wells #7, #11, and #14 rate moderate for system construction and Wells #8, #9, #10, #12, #15 through #20 rate low for system construction due to the indication that the casing and annular seal extended to low permeability units, and the well constructed nature of the wells. In fact, the City of Meridian makes it a point to develop and construct wells that meet and or generally exceed the current regulations. Information regarding the wells is summarized below (Table 1).

Table 1. City of Meridian Well Construction Summary Information

Well	Well Depth (ft)	Static Water Depth (ft)	Casing: diameter/ thickness (in)	Casing: depth (ft)/ formation	Surface seal: depth (ft)/ formation	Screened Intervals (ft)	Drill Year	Sanitary Survey Elements (A/B) [1]
Well #7	470	Artesian	20/0.375; 16/0.375	170/sand; 400/sand	319/clay & sand	400-450	1973	YES/YES
Well #8	485	17	20/0.375; 16/0.375	210/yellow clay; 398/clay	30/gravel & clay; Shoe seals set at 210 in yellow clay and 398 in sticky clay	398-418, 435-465	1975	YES/YES
Well #9	670	Artesian	20/0.375; 16/0.365; 14/0.375	223/silt; 366/sandy clay; 574/clay	330/clay & med. grained sand beds; shoe seal at 223 in silt; Seal crossed 145 feet clay	576.6-648	1997	YES/YES
Well #10	460	1.5	20/0.375; 16/0.375	235/sandy clay; 361/clay	24/gravel & sandy clay; Shoe seal at 234 in sandy clay and 361 in clay	361-432	1977	YES/YES
Well #11	207	2	12/0.250; 8/0.250	103/silty clay; 143/silty clay	70/fine to med sand	103-199	1979	YES/YES
Well #12	833	Artesian	20/0.250; 18/0.375	70/brown clay; 702/silty gray clay	245/clay & sandy clay; Shoe seal at 702 in clay	690-731, 772-823	1994	YES/YES
Well #14	515	23	18/0.375	250/fine to medium sand with thin lenses of silt and very fine sand	40/clay, sand, & gravel; Shoe seal at 255 in sand;	272-277, 285-305, 310-320, 336-356, 377-387, 398-413, 420-430, 435-445, 480-500	1992	YES/YES

Well	Well Depth (ft)	Static Water Depth (ft)	Casing: diameter/ thickness (in)	Casing: depth (ft)/ formation	Surface seal: depth (ft)/ formation	Screened Intervals (ft)	Drill Year	Sanitary Survey Elements (A/B) [1]
Well #15	765	Artesian	16/0.375	455/brown& blue clay streaks w/sand	440/sandy brown clay w/streaks of blue clay; Seal crosses 75 feet of clay	465-480 497-516, 536-570, 615-644, 649-660, 670-714, 724-729. 739-754	1993	YES/YES
Well #16	620	7	18/0.375	442/sandy blue clay	380/sandy clay; Seal crosses 50 feet of clay	447-467, 480-485, 495-535, 552-562 567-577 580-590	1994	YES/YES
Well #17	531	13	18/0.375	400/brown clay	400/brown clay	412-445 460-520	1996	YES/YES
Well #18	657	9	18/0.375	458/blue & gray clays	458/blue & gray clays	475-508 574-648	1999	YES/YES
Well #19	733	Artesian	18/0.375	521/coarse sand	521/coarse sand; Seal crosses >100 feet clay	582-703	1998	YES/YES
Well #20	625	Artesian	18/0.375	466/clay, streaks of sand	466/clay, streaks of sand; Seal crosses 85 feet clay	496-611	1998	YES/YES

[1] A = Well and surface seal in compliance; B = Protected from surface flooding
NI = no information was available

The well logs allowed a determination as to whether current public water system (PWS) construction standards are being met. The majority of the wells and all of the new wells since 1993 meet the current PWS well construction standards. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, thickness of casing, aquifer pump tests, annular seal placement, casing vent requirements, and thickness of casing. The wells with complete logs and the information provided by the operators allowed for a determination of whether an additional construction point was added to the scores.

Potential Contaminant Source and Land Use

Land use scores vary from low to high for IOCs (e.g. nitrates), VOCs (e.g. petroleum products), and SOCs (e.g. pesticides), and low for microbial contaminants (Table 2).

Those wells that have irrigated agricultural land use in the 3-year or 6-year TOT and/or have a large amount of potential contaminant sources in the 3-year TOT that could affect the well would rate high for IOCs. As the City of Meridian continues to urbanize, these levels of agricultural activities within the delineated boundaries will likely be reduced. Wells that have a large number of potential contaminant sources within the delineation and that cross several major transportation corridors have a high VOC and SOC land use score. The delineation of Well #19, stretching across predominantly residential and urban land and crossing very few transportation corridors, rates low for IOCs, VOCs, SOCs, and microbial contaminants.

In regards to potential microbial contamination sources, except for the transportation corridors and a few agriculturally related businesses, there is a lack of potential contaminant sites that could add microbial contamination to the aquifer. As such, each of the wells rated low for the land use portion of the final susceptibility score.

All of the delineated areas of the Meridian wells cross a nitrate priority area of large areal extent. Most of the well delineations (except for Wells #18 and #20) cross a large-scale priority area for the pesticides atrazine and alachlor. The delineations for Wells #18 and #20 cross a priority area for the VOC PERC. These priority areas, generally resulting from historic agricultural practices, contributed to the overall land use rating for all Meridian wells.

Final Susceptibility Ranking

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, storing potential contaminant sources within 50 feet of a wellhead will automatically lead to a high susceptibility rating. Hydrologic sensitivity and system construction scores are equally weighted with land use in the final scores. Having multiple potential contaminant sources in the 0- to 3-year TOT zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, all of the wells rate moderate susceptibility to all potential contaminant categories with the exception of Well #15, which rates low susceptibility to microbial contaminants.

Table 2. Summary of City of Meridian Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #7	M	M	H	H	L	M	M	M	M	M
Well #8	M	M	M	M	L	L	M	M	M	M
Well #9	M	H	M	M	L	L	M	M	M	M
Well #10	M	H	H	H	L	L	M	M	M	M
Well #11	H	H	M	H	L	M	M	M	M	M
Well #12	M	M	L	M	L	L	M	M	M	M
Well #14	H	H	M	H	L	M	M	M	M	M
Well #15	M	M	M	M	L	L	M	M	M	L
Well #16	M	M	M	M	L	L	M	M	M	M
Well #17	M	M	M	M	L	L	M	M	M	M
Well #18	M	H	M	M	L	L	M	M	M	M
Well #19	M	L	L	L	L	L	M	M	M	M
Well #20	M	M	M	M	L	L	M	M	M	M

[1]**H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility, IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

Susceptibility Summary

In terms of total susceptibility, all the wells detailed in this report rate moderate susceptibility to all potential contaminant categories. The exception is Well #15, which rates low susceptibility microbial contaminants.

Hydrologic sensitivity is high for Wells #11 and #14, and moderate for Wells #7, #8, #9, #10, #12, and #15 through #20 (Table 2). Well logs for Wells #8 through #11 were unavailable in the DEQ drinking water files, but were provided by the City of Meridian, allowing for a determination of the hydrologic composition surrounding the wells. Thick, low permeability clay layers above the producing zones indicated by the available well logs contributed to the moderate sensitivity ratings. Regional soil data indicate the presence of moderate to well drained soils for the areas contained within the modeled delineations. The vadose zone near the wellheads consists of sand, gravel, and clay in various proportions.

The City of Meridian provided useful well construction and lithologic information. Operator information provided a determination of the maintenance of wellhead and surface seals and protection of the wells from surface flooding. Wells #7, #11, and #14 rate moderate for system construction and Wells #8, #9, #10, #12, #15 through #20 rate low for system construction due to the wells being constructed and maintained over and above the regulations.

Though there are no current health-related water chemistry problems in the ground water, there have been detections in the tested well water of the naturally occurring IOCs aluminum, fluoride, barium, cadmium, chromium, magnesium, and manganese at levels below the current MCLs as set by the EPA. Additionally, at Well #17, the IOCs cyanide, beryllium, and antimony have been detected at levels below the MCLs. Nitrates have also been detected in a number of the City's wells at relatively low levels. However, according to a 2002 Idaho Department of Water Resources report (IDWR, 2002), levels above 2 ppm may be indicative of anthropogenic or human impacts.

The IOC arsenic has been detected in the distribution system at 8 ppb, in Well #11 at 5 ppb, and in Well #17 at 7 ppb. When these detections were made, the MCL for arsenic was 50 ppb. In October 2001, the U.S. EPA reduced the arsenic MCL from 50 ppb to 10 ppb, giving public water systems until January 2006 to comply with the new standard. If similar levels are detected after January 2006, they would be identified in the CCR because they would be equal to or greater than one-half the MCL of 10 ppb. There is not a current health risk related to arsenic in the City of Meridian's drinking water supply.

Total coliform bacteria were detected in the distribution system in October 1998, but have not been detected since. In October 1998 and August 2000, the VOC chloroform was detected in Wells #11 and #17. This trihalomethane is a by-product of the chlorination process and is not considered a problem with the source water. No SOCs have been detected in any of Meridian's well water to date.

Though the land use within the area of the Meridian wells is predominantly urban, all of the delineations cross a large-scale nitrate priority area declared for the general area in response to historical agricultural uses. For this reason, most of the well delineations also cross a priority area of the pesticides atrazine and alachlor. In addition to crossing a nitrate priority area, the delineations of Wells #18 and #20 also cross an organic priority area of the VOC PERC. This has the effect of increasing Meridian's susceptibility scores.

The priority areas were defined in 1998 and 1999 based on data collected from a variety of wells throughout the State. An organic priority area (i.e. VOC PERC) is an area where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards. An SOC priority area (i.e. pesticides atrazine and alachlor) is an area where greater than 25% of the wells/springs show the pesticides higher than primary standards or other health standards. A nitrate priority area is an area where greater than 25% of the wells/springs show nitrate values above 5 ppm.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The City of Meridian maintains that the first line of defense is adequate well construction practices. As such, the city employs professional hydrogeologists that recommend best management practices and supervise the development and installation of all of the city's wells. Current wells are built to a level, which is often beyond the current well construction standards. Older wells have been deepened and sealed, or when necessary, abandoned to protect the health of the public. Current wellhead protection practices should be maintained.

As many of the delineations cover predominantly urban areas, there should be a strong public education program to make people aware that they live above their source of drinking water. Additionally, storm water practices should be assessed. Since some of the well delineations cross agricultural land uses, there should be a focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas.

Much of the designated protection areas are outside the direct jurisdiction of the City of Meridian, making collaboration and partnerships with state and local agencies and industry groups critical to the success of drinking water protection. All wells should maintain sanitary standards regarding wellhead protection. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use. No potential contaminants should be allowed within 50 feet of any of the wellheads.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Program of the EPA. As there are transportation corridors through the delineations, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Ada Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water assessment protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the DEQ.

Any new wells that are installed as public water systems are required to follow current well construction standards. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. The City of Meridian policy is, and has been, to develop wells that meet or exceed these standards.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office (208) 373-0550

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mailto:mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Appendix A

Delineated Area Maps
Figures 2-14

Potential Contaminant Inventories
Tables 3-15

FIGURE 2 - City of Meridian Delineation Map and Potential Contaminant Source Locations

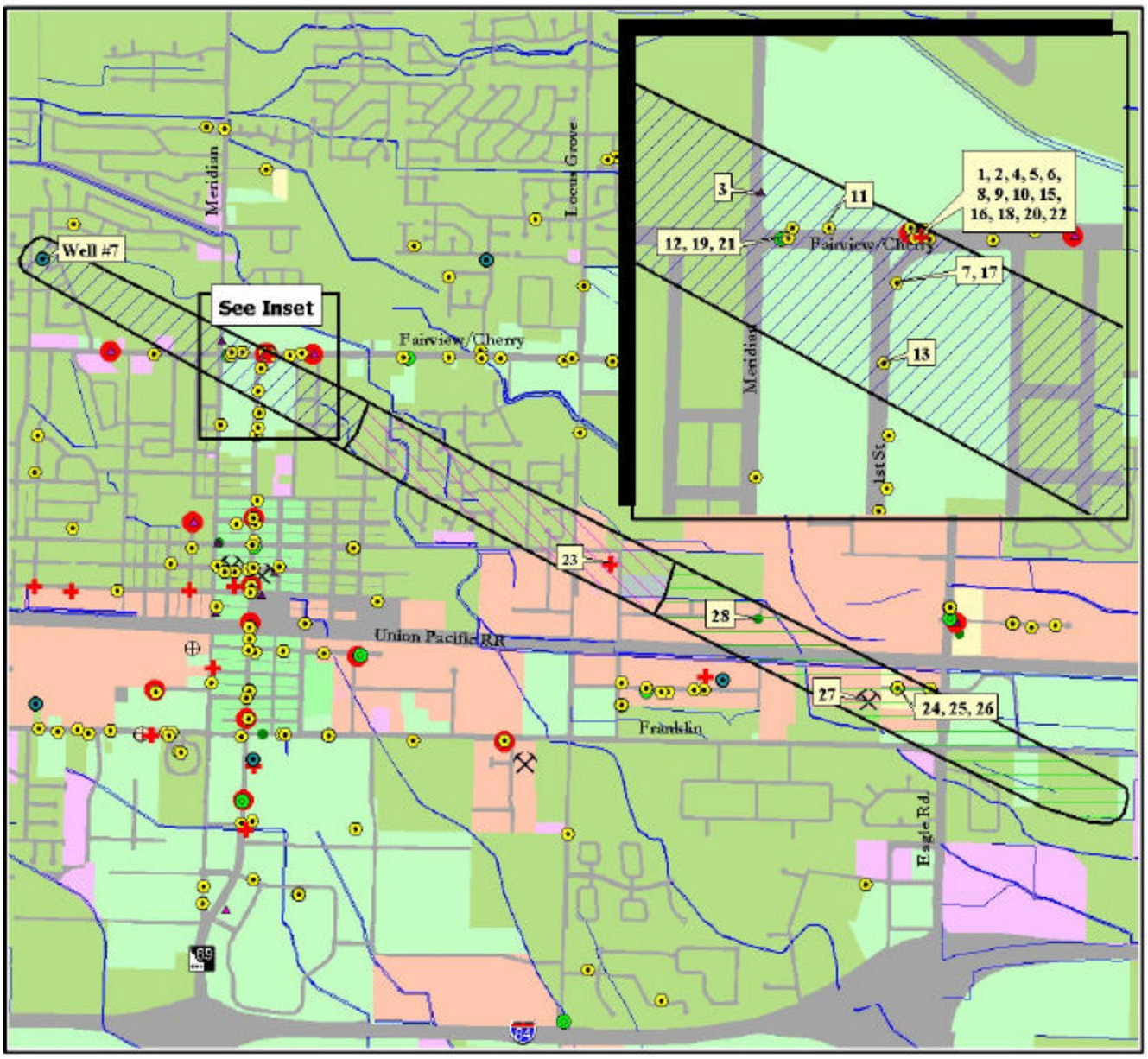

Table 3. City of Meridian Well #7. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1, 4, 10	LUST-Site Cleanup Incomplete, Impact: GROUND WATER; UST-Closed; Service Stations-Gasoline & Oil	0 – 3	Database Search	VOC, SOC
2, 6, 15, 18	LUST-Site Cleanup Complete, Impact: Unknown; UST-Closed; Automobile Seatcovers-Manufacturer; Automobile Seatcovers Tops & Upholstery	0 – 3	Database Search	IOC, VOC, SOC
3	UST-Closed	0 – 3	Database Search	VOC, SOC
5	UST-Closed	0 – 3	Database Search	VOC, SOC
7, 17	Rental Servic-Stores & Yards; Truck Renting & Leasing	0 – 3	Database Search	IOC, VOC, SOC
8	Tires-Dealers-Retail	0 – 3	Database Search	IOC, VOC, SOC
9	Transmissions-Automobile	0 – 3	Database Search	IOC, VOC, SOC
11	Hardware-Retail	0 – 3	Database Search	IOC, VOC, SOC
12	Cleaners	0 – 3	Database Search	VOC
13	Cleaners	0 – 3	Database Search	VOC
14	Tree Service	0 – 3	Database Search	IOC, SOC, Microbes
16	Automobile Body-Repairing & Painting	0 – 3	Database Search	IOC, VOC, SOC
19	Automobile Parts & Supplies-Retail	0 – 3	Database Search	IOC, VOC, SOC
20	Automobile Renting & Leasing	0 – 3	Database Search	IOC, VOC, SOC
21	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
22	Paint Store	0 – 3	Enhanced Inventory	IOC, VOC, SOC
23	Fuel Tank	3 – 6	Enhanced Inventory	VOC, SOC
24, 25, 26	UST-Closed; Mechanical Contractors; RCRA Site	6 – 10	Database Search	IOC, VOC, SOC
27	Mine	6 – 10	Database Search	IOC, VOC, SOC
28	SARA Site-Lawn & Garden Services	6 – 10	Database Search	IOC, SOC
	Fairview Avenue	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, SARA = Superfund Amendments and Reauthorization Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic contaminants, VOC = volatile organic contaminants, SOC = synthetic organic contaminants

Table 4. City of Meridian Well #8. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Unknown Barrels	0 – 3	Enhanced Inventory	IOC, VOC, SOC
2	UST-Closed	6 – 10	Database Search	VOC, SOC
3	UST-Open	6 – 10	Database Search	VOC, SOC
4	Roofing Contractors	6 – 10	Database Search	IOC, VOC, SOC
5	Trucking-Heavy Hauling	6 – 10	Database Search	IOC, VOC, SOC
	Meridian Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Interstate 84	3 – 6	GIS Map	IOC, VOC, SOC
	Overland Road	6 – 10	GIS Map	IOC, VOC, SOC

[1]UST = underground storage tank
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 5. City of Meridian Well #9. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1, 2, 15	LUST-Site Cleanup Complete, Impact: Unknown; UST-Closed; RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
3, 8	UST-Closed; Millwork (Manufacturers)	0 – 3	Database Search	IOC, VOC, SOC
4	Storage-Houshold & Commercial	0 – 3	Database Search	IOC, VOC, SOC, Microbes
5	Electric Motors-Dealers/Repairing	0 – 3	Database Search	IOC, VOC, SOC
6	Pumps Repairing	0 – 3	Database Search	IOC, VOC, SOC
7	Underground Wire & Laying	0 – 3	Database Search	IOC, VOC, SOC
9	Roofing Contractors	0 – 3	Database Search	IOC, VOC, SOC
10, 11	Mobile Homes-Repairing & Service; Carpet & Rug Repairing	0 – 3	Database Search	IOC, VOC, SOC
12	Plumbing Drain & Sewer Cleaning	0 – 3	Database Search	IOC, Microbes
13	Lawn & Garden Equipment & Supplies	0 – 3	Database Search	IOC, VOC, SOC, Microbes
14, 16	CERCLA Site, RCRA Site	0 – 3	Database Search	IOC, Microbes
17	Gas Station	0 – 3	Enhanced Inventory	VOC, SOC
18	Auto Repair	0 – 3	Enhanced Inventory	IOC, VOC, SOC
19	Farming Service	3 – 6	Database Search	IOC, SOC
20	Semiconductor Devices (Manufacturers)	3 – 6	Database Search	IOC, VOC, SOC
21	Waterproofing Contractors	3 – 6	Database Search	IOC, VOC, SOC
	Franklin Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Meridian Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Interstate 84	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, CERCLA = Comprehensive Environmental Response Compensation and Liability Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 6. City of Meridian Well #10. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Boat Dealers	0 – 3	Database Search	VOC, SOC
2	Service Stations-Gasoline & Oil	0 – 3	Database Search	VOC, SOC
3, 5	Cleaners; RCRA Site	0 – 3	Database Search	VOC
4	RCRA Site	0 – 3	Database Search	IOC, VOC, SOC
6	AST-Diesel	0 – 3	Database Search	IOC, VOC, SOC
7	Farm, Home, & Garden Retail	0 – 3	Enhanced Inventory	IOC, VOC, SOC, Microbes
8	Auto Parts	0 – 3	Enhanced Inventory	IOC, VOC, SOC
9	Auto Repair	0 – 3	Enhanced Inventory	IOC, VOC, SOC
10	Nursery	0 – 3	Enhanced Inventory	IOC, SOC, Microbes
11, 12	UST-Open; Trucking-Motor Freight	3 – 6	Database Search	IOC, VOC, SOC
13	Trucking	3 – 6	Database Search	IOC, VOC, SOC
14	SARA Site	3 – 6	Database Search	IOC, VOC, SOC
15	SARA Site	3 – 6	Database Search	IOC, VOC, SOC
16	Diesel Generator	3 – 6	Enhanced Inventory	VOC, SOC
17, 20	LUST-Site Cleanup Complete, Impact: GROUND WATER; UST-Open	6 – 10	Database Search	IOC, VOC, SOC
18, 23	UST-Closed; RCRA Site	6 – 10	Database Search	IOC, VOC
19	UST-Closed	6 – 10	Database Search	VOC, SOC
21	Plumbing Fixtures & Supplies-Wholesale	6 – 10	Database Search	IOC, VOC
22	Publishers	6 – 10	Database Search	IOC, VOC
24	Bulk Fertilizer	6 – 10	Enhanced Inventory	IOC, VOC, SOC
25	AST location	6 – 10	Enhanced Inventory	IOC, VOC, SOC
26	AST-Salt	6 – 10	Enhanced Inventory	IOC, VOC, SOC

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
27	Auto Repair	6 – 10	Enhanced Inventory	IOC, VOC, SOC
	Fairview Avenue	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Eagle Road	3 – 6	GIS Map	IOC, VOC, SOC
	Franklin Road	6 – 10	GIS Map	IOC, VOC, SOC
	Union Pacific Railroad	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, SARA = Superfund Amendments Reauthorization Act, AST = aboveground storage tank
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 7. City of Meridian Well #11. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Wrecker Service	0 – 3	Database Search	IOC, VOC, SOC
2	Auto Repair	0 – 3	Enhanced Inventory	VOC, SOC
3, 4, 13	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Closed; Service Stations-Gasoline & Oil	6 – 10	Database Search	VOC, SOC
5	UST-Open	6 – 10	Database Search	VOC, SOC
6	Automobile Parts & Supplies-Retail	6 – 10	Database Search	IOC, VOC, SOC
7, 15	Cleaners; RCRA Site	6 – 10	Database Search	VOC
8	Crane Service	6 – 10	Database Search	VOC, SOC
9	Automobile Parts & Supplies-Retail	6 – 10	Database Search	IOC, VOC, SOC
10	Paint-Retail	6 – 10	Database Search	IOC, VOC, SOC
11	Hardware-Retail	6 – 10	Database Search	IOC, VOC, SOC
12	Cleaners	6 – 10	Database Search	VOC
14	Computers-Manufacturers	6 – 10	Database Search	IOC, VOC, SOC
16	Home, Garden, Auto	6 – 10	Enhanced Inventory	IOC, VOC, SOC
17	Auto Repair	6 – 10	Enhanced Inventory	IOC, VOC, SOC
18	Auto Repair	6 – 10	Enhanced Inventory	IOC, VOC, SOC
	Eagle Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Interstate 84	3 – 6	GIS Map	IOC, VOC, SOC
	Franklin Road	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 8. City of Meridian Well #12. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	RCRA Site	3 – 6	Database Search	IOC, VOC, SOC
2	Concrete Manufacturer	3 – 6	Enhanced Inventory	IOC, VOC, SOC
3, 4, 10, 17	LUST-Site Cleanup Incomplete, Impact: Unlikely, UST-Open; Service Stations-Gasoline & Oil; SARA Site	6 – 10	Database Search	VOC, SOC
5	UST-Open	6 – 10	Database Search	VOC, SOC
6	Paving contractors	6 – 10	Database Search	IOC, VOC, SOC
7, 15	Automotive Trimming; RCRA Site	6 – 10	Database Search	IOC, VOC, SOC
8	Pipe Line Contractors	6 – 10	Database Search	IOC, VOC, SOC
9	Cemeteries	6 – 10	Database Search	IOC, SOC, Microbes
11, 16	Automobile Parts & Supplies-Retail; RCRA Site	6 – 10	Database Search	IOC, VOC, SOC
12	Recreational Vehicles	6 – 10	Database Search	IOC, VOC, SOC
13	Trailers-Automobile Utility	6 – 10	Database Search	IOC, VOC, SOC

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
14	CERCLA Site	6 – 10	Database Search	IOC, SOC
18	Auto Repair	6 – 10	Enhanced Inventory	IOC, VOC, SOC
19	Auto Repair	6 – 10	Enhanced Inventory	IOC, VOC, SOC
	Cherry Lane	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Franklin Road	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, CERCLA = Comprehensive Environmental Recovery Compensation and Liability Act, SARA = Superfund Amendments and Reauthorization Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 9. City of Meridian Well #14. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Semiconductor Devices (Manufacturer)	0 – 3	Database Search	IOC, VOC, SOC
2	Roofing Contractors	0 – 3	Database Search	IOC, VOC, SOC
3	Landscape Contractors	3 – 6	Database Search	IOC, SOC
4	Landscape Contractors	6 – 10	Database Search	IOC, SOC
	Overland Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Eagle Road	3 – 6	GIS Map	IOC, VOC, SOC
	Cloverdale Road	6 – 10	GIS Map	IOC, VOC, SOC

[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 10. City of Meridian Well #15. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Painters	0 – 3	Database Search	IOC, VOC, SOC
2, 5	LUST-Site Cleanup Incomplete, Impact: Unknown, UST-Closed	3 – 6	Database Search	VOC, SOC
3, 6	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Closed	3 – 6	Database Search	VOC, SOC
4	UST-Closed	3 – 6	Database Search	VOC, SOC
7	UST-Closed	3 – 6	Database Search	VOC, SOC
8	Excavating Contractors	3 – 6	Database Search	IOC, VOC, SOC
9	Landscape Contractors	3 – 6	Database Search	IOC, SOC
10	Feed-Dealers (Wholesale)	3 – 6	Database Search	IOC, VOC, SOC
11	Oil-Lubricating-Wholesale	3 – 6	Database Search	VOC, SOC
12	Tire-Dealers-Retail	3 – 6	Database Search	IOC, VOC, SOC
13	Automobile Machine Shop Service	3 – 6	Database Search	IOC, VOC, SOC
14	Automobile Radiator-Repairing	3 – 6	Database Search	IOC, VOC, SOC
15	Wrecker Service	3 – 6	Database Search	IOC, VOC, SOC
16	Fertilizers	3 – 6	Database Search	IOC, SOC
17	Feed-Dealers (Wholesale)	3 – 6	Database Search	IOC, VOC, SOC
18	RCRA Site	3 – 6	Database Search	IOC, VOC, SOC
19	Lumber Forest Products	3 – 6	Enhanced Inventory	IOC, VOC, SOC
20	UST-Open	3 – 6	Enhanced Inventory	VOC, SOC
21, 22, 24, 25	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Closed; Concrete-Blocks & Shapes-Manufacturer; SARA Site	6 – 10	Database Search	IOC, VOC, SOC
23	Hay (Wholesale)	6 – 10	Database Search	IOC, VOC, SOC
	Linder Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	3 – 6	GIS Map	IOC, VOC, SOC

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
	Meridian Road	3 – 6	GIS Map	IOC, VOC, SOC
	Franklin Road	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, SARA = Superfund Amendments Reauthorization Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 11. City of Meridian Well #16. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	SARA Site	0 – 3	Database Search	IOC, VOC, SOC
2	Diesel Generator	0 – 3	Enhanced Inventory	VOC, SOC
3, 6	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Open	3 – 6	Database Search	VOC, SOC
4, 9	UST-Closed; RCRA Site	3 – 6	Database Search	IOC, VOC, SOC
5	UST-Closed	3 – 6	Database Search	VOC, SOC
7	Plumbing Fixtures & Supplies-Wholesale	3 – 6	Database Search	IOC, VOC, SOC
8	Publishers	3 – 6	Database Search	IOC, VOC
10	Bulk Fertilizer	3 – 6	Enhanced Inventory	IOC, SOC
11	AST Location	3 – 6	Enhanced Inventory	VOC, SOC
12	AST-Salt	3 – 6	Enhanced Inventory	IOC, VOC, SOC
13	Auto Repair	3 – 6	Enhanced Inventory	IOC, VOC, SOC
	Eagle Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	3 – 6	GIS Map	IOC, VOC, SOC
	Franklin Road	3 – 6	GIS Map	IOC, VOC, SOC
	Interstate 84	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, RCRA = Resource Conservation Recovery Act, SARA = Superfund Amendments Reauthorization Act, AST = aboveground storage tank
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 12. City of Meridian Well #17. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Landscape Contractors	0 – 3	Database Search	IOC, SOC, Microbes
	Locust Grove Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Eagle Road	3 – 6	GIS Map	IOC, VOC, SOC
	Five Mile Road	6 – 10	GIS Map	IOC, VOC, SOC

[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 13. City of Meridian Well #18. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Dairy<= 200 cows	0 – 3	Database Search	IOC, Microbes
2	Excavating Contractors	3 – 6	Database Search	IOC, VOC, SOC
3, 5	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Open	6 – 10	Database Search	VOC, SOC
4, 6, 13	LUST-Site Cleanup Incomplete, Impact: Unknown, UST-Closed; Rental Service-Stores & Yards	6 – 10	Database Search	VOC, SOC
7	Automobile Repairing & Service	6 – 10	Database Search	IOC, VOC, SOC
8	Car Washing & Polishing	6 – 10	Database Search	IOC, VOC, SOC
9	Automobile Dealers-Used Cars	6 – 10	Database Search	IOC, VOC, SOC
10, 15	Laboratories-Dental	6 – 10	Database Search	IOC, VOC, SOC

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
11	Car Washing and Polishing	6 – 10	Database Search	IOC, VOC, SOC
12	Storage-Household & Commercial	6 – 10	Database Search	IOC, VOC, SOC
14	Photo Finishing-Retail	6 – 10	Database Search	IOC, VOC
16	Volatile Organic Chemical Plume	6 – 10	Database Search	VOC
	Ustick Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Eagle Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Cloverdale Drive	3 – 6	GIS Map	IOC, VOC, SOC
	Cherry Lane	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 14. City of Meridian Well #19. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1, 2	LUST-Site Cleanup Incomplete, Impact: GROUND WATER, UST-Open	6 – 10	Database Search	VOC, SOC
3	Funeral Directors	6 – 10	Database Search	IOC, SOC
4	Building Contractors	6 – 10	Database Search	IOC, VOC, SOC
5	Nurserymen	6 – 10	Database Search	IOC, SOC
6	Automobile Repairing & Service	6 – 10	Database Search	IOC, VOC, SOC
7	Cleaners	6 – 10	Database Search	VOC
8	Construction	6 – 10	Database Search	IOC, VOC, SOC
9	SARA Site	6 – 10	Database Search	VOC, SOC
	Ustick Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Ten Mile Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Fairview/Cherry Lane	6 – 10	GIS Map	IOC, VOC, SOC
	Meridian Road	6 – 10	GIS Map	IOC, VOC, SOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, SARA = Superfund Amendments Reauthorization Act
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 15. City of Meridian Well #20. Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone (Years)	Source of Information	Potential Contaminants[3]
1	Painters	3 – 6	Database Search	IOC, VOC, SOC
	Ustick Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Meridian Road	0 – 3	GIS Map	IOC, VOC, SOC, Microbes
	Cherry Lane	6 – 10	GIS Map	IOC, VOC, SOC
	Eagle Road	6 – 10	GIS Map	IOC, VOC, SOC

[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Appendix B

City of Meridian
Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction		SCORE			
Drill Date	5/14/1973				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2002			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
	Total Hydrologic Score	4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	12	16	15	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	3	7	3	
4 Points Maximum		3	4	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		13	12	13	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	0	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		2	4	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		20	21	21	6
4. Final Susceptibility Source Score		11	11	11	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE			
Drill Date	1/15/1975				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2002			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
	Total System Construction Score	1			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
	Total Hydrologic Score	4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	2	2	1
(Score = # Sources X 2) 8 Points Maximum		4	4	4	2
Sources of Class II or III leacheable contaminants or	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	6	8	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		15	13	15	4
4. Final Susceptibility Source Score		8	8	8	7
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE			
Drill Date	1/2/1997				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2002			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		1			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	13	12	12	5
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	4	4	3	
4 Points Maximum		4	4	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		14	12	13	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		21	19	20	10
4. Final Susceptibility Source Score		9	9	9	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction			SCORE			
Drill Date		9/7/1976				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	2002			
Well meets IDWR construction standards		NO	1			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		1			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		YES	0			
	Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A		URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high		NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	7	9	9	3
(Score = # Sources X 2) 8 Points Maximum			8	8	8	6
Sources of Class II or III leacheable contaminants or		YES	2	3	2	
4 Points Maximum			2	3	2	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	2	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land		2	2	2	2
	Total Potential Contaminant Source / Land Use Score - Zone 1B		14	13	14	8
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		YES	2	2	2	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land		1	1	1	
	Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score			22	21	22	10
4. Final Susceptibility Source Score			9	9	9	9
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE				
Drill Date	6/19/1979					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2002				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	1				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		2				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		6				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL		2	2	2	2
Farm chemical use high	NO		0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO		NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A			2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES		4	4	4	3
(Score = # Sources X 2) 8 Points Maximum			8	8	8	6
Sources of Class II or III leacheable contaminants or	YES		4	4	4	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES		2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land		0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B			14	12	14	6
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES		2	2	2	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land		1	1	1	
Potential Contaminant Source / Land Use Score - Zone II			4	4	4	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES		1	1	1	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO		0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III			2	2	2	0
Cumulative Potential Contaminant / Land Use Score			22	20	22	8
4. Final Susceptibility Source Score			12	12	12	11
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE
Drill Date	12/7/1994	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2002
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	1

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
	Total Hydrologic Score	4

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		5	3	5	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		12	10	12	4
4. Final Susceptibility Source Score		7	7	7	7
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE
Drill Date	9/17/1992	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2002
Well meets IDWR construction standards	YES	0
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	2

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	5

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	3	3	1
(Score = # Sources X 2) 8 Points Maximum		6	6	6	2
Sources of Class II or III leacheable contaminants or	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	10	12	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		21	19	21	6
4. Final Susceptibility Source Score		11	11	11	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE				
Drill Date	5/16/1993					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2002				
Well meets IDWR construction standards	YES	0				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
	Total System Construction Score	0				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	NO	0				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	YES	0				
	Total Hydrologic Score	3				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL		2	2	2	2
Farm chemical use high	NO		0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO		NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A			2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES		2	2	2	1
(Score = # Sources X 2) 8 Points Maximum			4	4	4	2
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
4 Points Maximum			1	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES		2	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land		0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B			7	5	7	2
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES		2	2	2	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land		1	1	1	
Potential Contaminant Source / Land Use Score - Zone II			4	4	4	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES		1	1	1	
Sources of Class II or III leacheable contaminants or	YES		1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO		0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III			2	2	2	0
Cumulative Potential Contaminant / Land Use Score			15	13	15	4
4. Final Susceptibility Source Score			6	6	6	5
5. Final Well Ranking			Moderate	Moderate	Moderate	Low

1. System Construction		SCORE			
Drill Date	11/20/1994				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2002			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		0			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	3	3	1
(Score = # Sources X 2) 8 Points Maximum		4	6	6	2
Sources of Class II or III leacheable contaminants or	YES	3	3	1	
4 Points Maximum		3	3	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		11	11	11	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		18	18	18	6
4. Final Susceptibility Source Score		8	8	8	6
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : MERIDIAN WATER DEPARTMENT Well# : WELL #17
Public Water System Number 4010097 3/21/2003 11:46:46 AM

1. System Construction		SCORE				
Drill Date	6/10/1996					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2002				
Well meets IDWR construction standards	YES	0				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
	Total System Construction Score	0				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	YES	0				
	Total Hydrologic Score	4				
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	2	1	2	2	
(Score = # Sources X 2) 8 Points Maximum		4	2	4	4	
Sources of Class II or III leacheable contaminants or	YES	2	1	2		
4 Points Maximum		2	1	2		
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	3	8	4	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES	2	2	2		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1		
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES	1	1	1		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0		
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0	
Cumulative Potential Contaminant / Land Use Score		16	11	16	6	
4. Final Susceptibility Source Score		7	6	7	6	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	

1. System Construction		SCORE				
Drill Date	6/10/1996					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2002				
Well meets IDWR construction standards	YES	0				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
	Total System Construction Score	0				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	YES	0				
	Total Hydrologic Score	4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	3	2	2	3	
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6	
Sources of Class II or III leacheable contaminants or	YES	5	2	2		
4 Points Maximum		4	2	2		
Zone 1B contains or intercepts a Group 1 Area	YES	2	2	2	0	
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2	
Total Potential Contaminant Source / Land Use Score - Zone 1B		14	10	10	8	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES	2	2	2		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Land Use Zone II	Less than 25% Agricultural Land	0	0	0		
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES	1	1	1		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0		
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0	
Cumulative Potential Contaminant / Land Use Score		21	17	17	10	
4. Final Susceptibility Source Score		8	7	7	8	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	

1. System Construction		SCORE				
Drill Date		3/11/1998				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		YES	2002			
Well meets IDWR construction standards		YES	0			
Wellhead and surface seal maintained		YES	0			
Casing and annular seal extend to low permeability unit		YES	0			
Highest production 100 feet below static water level		YES	0			
Well located outside the 100 year flood plain		YES	0			
	Total System Construction Score		0			
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained		NO	2			
Vadose zone composed of gravel, fractured rock or unknown		YES	1			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		YES	0			
	Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL		2	2	2	2
Farm chemical use high		NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum			2	2	2	2
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
4 Points Maximum			1	1	1	
Zone 1B contains or intercepts a Group 1 Area		YES	2	0	2	0
Land use Zone 1B	25 to 50% Non-Irrigated Agricultural Land		1	1	1	1
	Total Potential Contaminant Source / Land Use Score - Zone 1B		6	4	6	3
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present		NO	0	0	0	
Sources of Class II or III leacheable contaminants or		NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land		0	0	0	
	Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present		YES	1	1	1	
Sources of Class II or III leacheable contaminants or		YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of		NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score			10	8	10	5
4. Final Susceptibility Source Score			6	6	6	6
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE				
Drill Date	10/14/1998					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	2002				
Well meets IDWR construction standards	YES	0				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	YES	0				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		0				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	NO	2				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	YES	0				
Total Hydrologic Score		4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	2	2	2	2	
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4	
Sources of Class II or III leacheable contaminants or	YES	2	2	2		
4 Points Maximum		2	2	2		
Zone 1B contains or intercepts a Group 1 Area	YES	2	2	2	0	
Land use Zone 1B	Less than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	8	8	4	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES	2	2	2		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Land Use Zone II	Less than 25% Agricultural Land	0	0	0		
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES	1	1	1		
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0		
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0	
Cumulative Potential Contaminant / Land Use Score		15	15	15	6	
4. Final Susceptibility Source Score		7	7	7	6	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	